Problem D: The Walrus and the Carpenter

Alice didn't have much time to miss the departure of her Fawn friend, when she came across Tweedledee and Tweedledum, two round-shaped brothers who enjoy telling stories and reciting poetry. They told Alice the astounding and poignant story of *The Walrus and the Carpenter*, a couple of astute characters who trick a group of oysters into following them on a long walk, until they came to rest upon a rock, where the Walrus and the Carpenter proceeded to eat the poor oysters.

Figure 1: Feasting on the Oysters

The brothers finished their story, and Alice paused for a moment to think about its protagonists.

"I like the Walrus best," said Alice, "because you see he was a little sorry for the poor oysters."

"He ate more than the Carpenter, though," said Tweedledee. "You see he held his handkerchief in front, so that the Carpenter couldn't count how many he took: contrariwise."

"That was mean!" Alice said indignantly. "Then I like the Carpenter best—if he didn't eat so many as the Walrus."

"But he ate as many as he could get," said Tweedledum.

This was a puzzler. After a pause, Alice began, "Well! They were both very unpleasant characters."

Initially there was an amount of oysters greater than 2. The Walrus eats them systematically in a series of turns. In his first turn he eats one oyster; for the *ith* turn, if there are at least i oysters remaining, he eats i oysters, and continues eating in this way until at some turn k there are less than k oysters remaining. Those remaining oysters are then eaten by the Carpenter. For example, if there are 13 oysters to begin with, then the Walrus eats 10 of those in four turns (eating 1, 2, 3, 4 at each turn respectively), and the Carpenter eats 3.

If you know the amount of oysters that they started with, can you determine how may oysters did the Walrus and the Carpenter eat?

Input

Input starts with a positive integer **T**, that denotes the number of test cases ($T \leq 30000$).

Each test case consists of a single line that contains an integer **N**, denoting the initial number of oysters.

$3 \leq N \leq 5 \times 10^{11}$

Output

For each test case, print the case number, and then print two integers separated by a single space, representing the number of oysters eaten by the Walrus and the Carpenter, in that order.

Sample Input

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2
13
100
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Output for Sample Input

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Case 1: 10 3
Case 2: 91 9
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